REMARKS

The Office Action dated November 3, 2006 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 7, and 8 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 5, 6, 12, and 13 have been cancelled without prejudice or disclaimer. No new matter has been added and no new issues are raised which require further consideration or search. Claims 1-4 and 7-11 are currently pending in the application and are respectfully submitted for consideration.

Claims 1, 5-8, 12, and 13 were rejected under 35 U.S.C. §102(e) as being anticipated by Olson (U.S. Patent No. 7,050,778). The rejection is respectfully traversed for the following reasons.

Claim 1, upon which claims 2-4 are dependent, recites a method comprising filtering a signal with a bandpass filter, measuring image rejection and DC offset rejection of the filtered signal, and adjusting a center frequency of the bandpass filter. The filtering, measuring and adjusting is repeated until a compromise between DC offset rejection and image rejection is achieved. The compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements.

Claim 7 recites a system comprising means for filtering a signal, means for measuring image rejection and DC offset rejection of the filtered signal, and means for adjusting a center frequency of the means for filtering. The filtering, measuring and adjusting is repeated until a compromise between DC offset rejection and image rejection is achieved. The compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements.

Claim 8, upon which claims 9-13 are dependent, recites a system comprising a bandpass filter capable of filtering a received signal and capable of having a center frequency adjusted, and at least one measurement circuit, communicatively coupled to the filter, capable of measuring image rejection and DC offset rejection of the filtered signal. The bandpass filter and at least one measurement circuit continue to filter, measure and adjust the center frequency until a compromise between DC offset rejection and image rejection is achieved. The compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements.

Therefore, embodiments of the present invention, enable a compromise between DC offset rejection and image rejection through the use of a bandpass filter having a variable center frequency.

As will be discussed below, Olson fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above.

Olson discloses a direct conversion television tuner for processing television or cable signals. The tuner down-converts a selected channel directly from an RF frequency to an IF frequency or baseband without performing an intermediate up-conversion frequency translation. The tuner includes a pre-selected filter, an amplifier, an image reject mixer, and an IF filter. The pre-select filter receives an RF signal having multiple TV channels. The image reject mixer down-converts a selected channel to an IF frequency that is within the passband of the IF filter. Channel selection is performed by tuning the frequency of a local oscillator signal that drives the image reject mixer, and thereby tuning the channel that is translated into the passband of the IF filter.

Applicants respectfully submit that Olson fails to disclose or suggest all of the elements of the claimed invention. For example, Olson does not disclose or suggest "wherein the filtering, measuring and adjusting is repeated until a compromise between DC offset rejection and image rejection is achieved, and wherein the compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements," as recited in claims 1 and 7. Similarly, Olson does not disclose or suggest "wherein the bandpass filter and at least one measurement circuit continue to filter, measure and adjust the center frequency until a compromise between DC offset rejection and image rejection is achieved, and wherein the compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements," as recited in claim 8.

According to embodiments of the present invention, the IF center frequency is adjusted (610) by varying resistance of the resistors 410. A received signal is then filtered (620) using a bandpass filter using the adjusted frequency. Image rejection and DC offset rejection of the filtered signal is then measured (630, 640). It is then determined (650) if the measurements are within a specific tolerance (e.g., DC offset rejection is within acceptable tolerances and image rejection meet minimum pre-specified requirements). If the measurements are within the tolerances, the method 600 ends. Otherwise, the center frequency is then adjusted (610) again and the method 600 repeats (Specification, paragraph 0031 and Figure 6). During the operation of the filter 400, the IF frequency of the filter 400 is shifted upwards to improve DC offset rejection (as shown in FIG. 5A) and downwards to improve image rejection (as shown in FIG. 5B) until a compromise is reached (Specification, paragraph 0030 and Figures 5A and 5B).

Olson, on the other hand, fails to disclose or suggest that a compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements, as recited in the present claims. Olson merely discloses that "the parameters of the amplifier 1306 are adjusted so that the amplitude of the I and Q channels are balanced, and so that the phase difference between the I and Q channels is 90 degrees" (Olson, Column 11, lines 31-34). In addition, Olson teaches that "the processor 1334 calibrates the image reject mixer 1310 to maximize the image rejection at the selected channel frequency... the relative phase-shift between the I and Q components of a LO signal 1311 is adjusted to produce the maximum I/Q balance at the

output of image reject mixer 1310. In other words, the phase difference between the I and Q components of the LO signal 1311 is varied from 90 degrees to compensate for any residual I/Q imbalance that is left in the mixer 1310 after step 1502" (Olson, Column 11, lines 53-67). Therefore, Olson only discloses that image rejection is maximized at the selected channel frequency and that the relative phase-shift between the I and Q components is adjusted to produce the maximum I/Q balance at the output of image reject mixer.

Olson makes no mention of reaching a compromise between DC offset rejection and image rejection, and that the compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements. Thus, Olson fails to disclose or suggest all of the elements of claims 1, 7, and 8. As such, Applicants respectfully request that the rejection of claims 1, 7, and 8 be withdrawn.

Claims 2-4 and 9-11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Olson in view of Vinn (U.S. Patent No. 6,441,682). The Office Action took the position that Olson discloses all of the elements of the claims, with the exception of the bandpass filter comprising two cross-coupled low pass filters, wherein the cross-coupling includes cross-coupled variable resistors and wherein the adjusting is done by varying the resistance of the cross-coupled variable resistors. The Office Action then cites Vinn as allegedly disclosing this element of the claims. The rejection is respectfully traversed for the following reasons.

Olson is discussed above. Vinn discloses an active-RC polyphase band-pass filter with transconductor cross-coupling between filter sections. The polyphase filter has first to fourth inputs, first to fourth outputs, two filter sections, and a block of transconductor pairs. The four input signals succeed one another in phase by 90 degrees. The two filter sections have reactances comprised of active balanced operational amplifiers with matched capacitors in their feedback loops. The block of transconductor pairs is coupled between corresponding reactances of each filter. The transconductance of each transconductor pair is set as the product of a desired radian center frequency and the capacitance of the corresponding matched capacitors.

Applicants note that claims 2-4 and 9-11 are dependent upon claims 1 and 8, respectively. Additionally, Vinn fails to cure the deficiencies in Olson with respect to claims 1 and 8, as discussed above, since Vinn also fails to disclose or suggest "wherein the filtering, measuring and adjusting is repeated until a compromise between DC offset rejection and image rejection is achieved, and wherein the compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements." Accordingly, the combination of Olson and Vinn fails to disclose or suggest all of the elements of claims 2-4 and 9-11. Furthermore, claims 2-4 and 9-11 should be allowed for at least their dependence upon claims 1 and 8, and for the specific limitations recited therein.

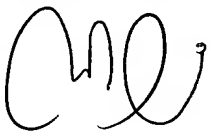
Applicants respectfully submit that the cited prior art fails to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient

to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 1-4 and 7-11 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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